Abstract

Described is a system and method for providing a synchronization pattern in a communication system. The method includes generating a synchronization pattern with good randomness properties; packing a signal for transmission with m headers, each header consisting of the synchronization pattern 1/m symbol-time shifted from the previous header; and transmitting the signal. A further method provides for the sampling the transmitted signal with m headers of symbol-time shifted synchronization patterns; and determining symbol timing offset by computing and reordering correlation peaks from the synchronization patterns. A system includes a transmitting system, a receiving system, and a data channel. The transmitted signal includes m headers with 1/m symbol-time shifted synchronization patterns. The receiving system undersamples the transmitted signal with m synchronization patterns to simulate an oversampled synchronization pattern.